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Publication 383S

This supplement contains changes/additions/deletions to the 2003 edition of Publication 383, *Nursery & Landscape Plant Production and IPM*. For complete recommendations, refer to the original publication and include these changes.

CHAPTER 3. INSECT AND DISEASE MANAGEMENT

Page 59.
Replace
Please use this table in place of the one in the original 2003 publication.

Table 3–21. Insecticides and Fungicides Used to Protect Ornamentals (by Product Name)

Product Name	Type	Schedule	Common Name	Oral LD_{50} (mg a.i./kg)**	Chemical Family
Alamo	I	2	propiconazole	2,100	Triazole
Apollo SC	A	2	chlofentezine	> 5,000	Tetrazine, Mite Growth Inhibitor
BioProtec	I	3	*Bacillus thuringiensis*	> 15,000	Biological
Botran	F	3	dicloran	> 10,000	Dicarboximide
Copper	F	3	copper sulphate		Inorganic
Confirm	I	2	tebufenozide	> 5,000	Insect Growth Regulator
Compass 50 WG	F	2	trifloxystrobin	> 5,050	Strobilurin
Copper Spray	F	3	copper oxychloride		Inorganic
Daconil 2787	F	3	chlorothalonil	> 10,000	Aromatic hydrocarbon
Deadline	M	6	metaldehyde	250	
Decree	F	2	fenhexamid	> 5,000	Anilide
Diazinon	I	2	diazinon	300	Organophosphate
Dipel	I	3	*Bacillus thuringiensis*	> 15,000	Biological
Dithane DG	F	3	mancozeb	> 5,000	Dithiocarbamate
Dithane M-45	F	3	mancozeb	6,750	Dithiocarbamate
Dursban T	I	3	chlorpyrifos	135	Organophosphate
Dygall	F		*Agrobacterium radiobacter*		Biological
Dylox	I	3	trichlorfon	560	Organophosphate
Dyno-Mite	A,I	2	pyridaben	1,930	Pyridazone
Eagle	F	2	myclobutanil	1,600	Triazole

Table 3–21. Insecticides and Fungicides Used to Protect Ornamentals (by Product Name)

Product Name	Type	Schedule	Common Name	Oral LD_{50} (mg a.i./kg)**	Chemical Family
Endeavor 50 WG	I	2	pymetrozine	> 5,000	Pyridine azomethine
Endosulfan	I	2	endosulfan	110	Organochlorine
Equal 65 WP	F	3	dodine	1,000	Aliphatic nitrogenous compound
Ferbam	F	3	ferbam	> 17,000	Dithiocarbamate
Floramite SC	A	3	bifenazate	> 5,000	Carbazate
Folpan	F	3	folpet	10,000	Phthalimide
Foray	I	3	*Bacillus thuringiensis*	>15,000	Biological
Funginex	F	3	triforine	> 16,000	Ergosterol biosynthesis inhibitor
Ground Force	R		chlorophacinone	2.1	
Heritage	F	X	azoxystrobin	> 5,000	Strobilurin
Imidan	I	3	phosmet	300	Organophosphate
Intercept 60WP	I	5	imidacloprid	1,858	Chloronicotinyl
Kelthane	A	2	dicofol	684	Organochlorine
Lagon 480 E	I	2	dimethoate	215	Organophosphate
Landscape Oil	I	6	mineral oil	> 15,000	Horticultural Oil
Lannate	I	2	methomyl	17	Carbamate
Maestro 80 DF	F	2	captan	9,000	Phthalimide
Malathion	I	3	malathion	1,400	Organophosphate
Manzate 200	F	3	mancozeb	6,750	Dithiocarbamate
Meltatox	F	3	dodemorph	4,500	Morphactin
Metaldehyde bait		3	metaldehyde	630	
MilStop	F	3	potassium bicarbonate	2,700	
Mimic	I	2	tebufenozide	> 5,000	Insect Growth Regulator
Nemasys H	I		*Heterohabditis megidis*		Biological
Nova	F	2	myclobutanil	1,600	Triazole
Orthene	I	3	acephate	866	Organophosphate
Pirliss	I	2	pirimicarb	147	Carbamate
Polyram	F	3	metiram	> 10,000	Dithiocarbamate
Pounce	I	3	permethrin	> 4,000	Pyrethroid
Pyrate	I	3	chlorpyrifos	135	Organophosphate
Ramik Brown, Ramik Green	R R	3	diaphacinone	3	
Ratak+	R	2	brodifacaum	0.27	
Ripcord 400 EC	I	2	cypermethrin	242	Pyrethroid
Rodent Bait, Rodent Pellets	R R	1,2	zinc phosphide	45	
Rootshield	F	3	*Trichoderma harzianum*		Biological
Rovral	F	3	iprodione	3,550	Dicarboximide
Rozol	R		chlorophacinone		
Safers' Insecticidal Soap	I				
Senator 70 WP	F	2	thiophanate-methyl	7,500	Benzimidazole
Sevin T&O	I	3	carbaryl	560	Carbamate
Sluggo	M	6	ferric phosphate	> 5,000	Mineral

Table 3–21. Insecticides and Fungicides Used to Protect Ornamentals (by Product Name)

Product Name	Type	Schedule	Common Name	Oral LD_{50} (mg a.i./kg)**	Chemical Family
Subdue MAXX	F	2	metalaxyl-M and S-isomer	3,436	Phenylamide
Success 480 SC	I	3	spinosad	> 2,000	Naturalyte
Sulphur (92%)	F	6	sulphur	> 5,000	Inorganic
Sumithion	I		fenitrothion		
Supra Captan 80 WDG	F	2	captan	9,000	Phthalimide
Thiodan	I	2	endosulfan	110	Organochlorine
Thionex	I	2	endosulfan	110	Organochlorine
Thiram	F	3	thiram	780	Dithiocarbamate
Thuricide	I	3	*Bacillus thuringiensis*	> 15,000	Biological
Tristar 70 WSP	I	2	acetimiprid	1,064	Chloronicotine
Truban	F	3	etridiazole	1,077	Thiadiazole
Vectobac	I	3	*Bacillus thuringiensis* subsp. *israelensis*	> 15,000	Biological
Vendex	A	3	fenbutatin oxide	2,631	Organotin
Waxed Mouse Bait	R	1,2	zinc phosphide	45	
Zineb	F	3	zineb	> 5,000	Dithiocarbamate

I = Insecticide; F = Fungicide; R = Rodenticide; A = Acaricide; M = Molluscicide

CHAPTER 3. A Compendium of Pests and Diseases with Recommended Management Practices (pg. 62-92)

Add

Please add these products and uses to those listed in the original 2003 publication.

Product	Rate	Pest(s)	Hosts	Remarks
INSECTICIDES				
Apollo SC	80 mL/ha	Two-spotted spider mite	Outdoor deciduous nursery stock (including *Malus*, *Pyrus*, *Rosa*, *Clematis*, *Crataegus*, *Hedera*, *Potentilla*, *Ribes*, *Ulmus*, *Caragana*, *Euonymus*, *Salix*, *Prunus* and herbaceous perennials)	See remarks under two-spotted spider mite starting on pg. 75. Apollo SC acts primarily on mite eggs but has an effect on young motile stages. It is not effective against adult mites. Apollo SC should be applied when mite populations are predominately in the egg stage, with few active, young motiles present. Do not make more than one application of Apollo SC ovicidal miticide per season. REI is 12 hours.
Dyno-Mite	284 g/ha in 1,000 L	Two-spotted spider mite, European red mite, Apple rust mite, Pear rust mite.	Outdoor ornamental plants for nursery stock	See remarks under two-spotted spider mite and European red mite starting on pg. 75. Apply Dyno-Mite when mites first appear. Apply Dyno-Mite a maximum of 2 applications per season at an interval of 28 days apart.
Dursban T	4.5 L/1,000 L	Japanese beetle larvae	Outdoor ornamentals (field and container nursery stock)	See remarks for Japanese beetle starting on pg. 85. Apply to soil when grubs are young and actively feeding near soil surface. Apply as a course spray and irrigate with 1-2 cm of water to wash insecticide into underlying soil. For containerized stock, submerge root ball into a solution of Dursban T (45 mL/10 L water) until all bubbling stops.
Endeavor	10–20 g/100 L water	Green peach aphids and melon aphids	Outdoor ornamentals	See remarks under aphids starting on pg. 62. For outdoor use, do not apply more than 3 kg/ha per year. Do not exceed 3 applications (3 x 20 g /100 L) per year. There should be at least 7 days between applications.
Floramite SC	625 mL per 1,000 L	Spruce spider mite	Christmas trees	See remarks under spruce spider mite starting on pg. 76. Apply when mites first appear and will provide residual control for up to 28 days. Only two applications per year. REI is 12 hours. It is important to keep the spray concentration constant. Do not use Floramite SC in successive applications.
Intercept 60 WP	467 g/ha	Japanese beetle, European chafer	Field and Container Grown Nursery Stock	See remarks under white grubs starting on pg. 62. Apply this product once per year, during the mating period/egg-laying period and up to egg hatch (usually early July in Ontario). REI is 12 hours. In the field, sufficient irrigation (5–10 mm) should occur within 24 hours after application but avoid overwatering (e.g. 20 mm)

Product	Rate	Pest(s)	Hosts	Remarks
INSECTICIDES				
Landscape Oil	20L/ha	Scale insects, spider mites, mealybug, whitefly larvae.	Nursery and landscape trees and shrubs	See remarks under scale insects starting on pg. 62 and mites starting on pg. 63. Apply to plants when they are either dormant or in full leaf and when susceptible pest life stages are present (e.g. crawlers, nymphs). Do not apply to *Thuja*, *Fagus*, *Carya*, *Juglans* or *Pinus strobus*. Discoloration will occur on blue cultivars of *Juniperus* and *Picea*.
Ripcord 400 EC	172 mL/ha	Tarnished plant bug	Conifer seedlings	See remarks under tarnished plant bug on pg. 90. Do not apply more than 3 times per season. Not for use in the greenhouse.
Success 480 SC	25 mL/1,000 L	Conifer sawfly larvae	*Pinus*	See remarks under pine sawflies on pg. 78. For outdoor ornamentals only. Do not make more than 4 applications per year. This product is highly toxic to bees and aquatic invertebrates.
Success 480 SC	25 mL/1,000 L	Eastern tent caterpillar	*Crataegus*, *Malus*, *Prunus*	See remarks under Eastern tent caterpillar on pg. 74.
Success 480 SC	25 mL/1,000 L	Elm leaf beetle	*Ulmus*	See remarks under elm leaf beetle on pg. 92.
Success 480 SC	25 mL/1,000 L	Gypsy moth	*Acer*, *Betula*, *Fagus*, *Fraxinus*, *Malus*, *Quercus*, *Salix*, *Tilia*, *Ulmus*	See remarks under Gypsy moth on pg. 65.
Success 480 SC	25 mL/1,000 L	Willow leaf beetle	*Salix*	See remarks under willow leaf beetle on pg. 87.
Success 480 SC	50 mL/1,000 L	Western flower thrips	Various ornamental hosts. See product label.	Do not make more than 3 applications per year.
Success 480 SC	50 mL/1,000 L	Western flower thrips	Greenhouse ornamentals	Do not make more than 3 applications per crop cycle. Apply at 7–10 day intervals.
Tristar 70 WSP	3 solupaks/1,000 L	Aphid	Various ornamental hosts	See remarks under aphids starting on pg. 62. Do not make more than 2 applications per year in greenhouse, shadehouse or lathhouse. Do not make more than 5 applications per year on outdoor ornamentals.
Tristar 70 WSP	3 solupaks/1,000 L	European pine sawfly	*Pinus*	See remarks under pine sawfly on pg. 78.
Tristar 70 WSP	5 solupaks/1,000 L	Tentiform leafminer	*Malus*	Use insecticides to control the 1st generation during the prebloom or calyx stage. Early mines are only visible from lower leaf surfaces, later stages are visible from upper leaf surface. There are 3 generations per year.
Tristar 70 WSP	5 solupaks/1,000 L	Leafhopper	Various ornamental hosts	See remarks under leafhopper starting on pg. 70.

Product	Rate	Pest(s)	Hosts	Remarks
FUNGICIDES				
Compass 50 WG	140–210 g/1,000 L	Powdery mildew	*Crataegus*, *Malus*, *Prunus*	See remarks under powdery mildew on pg. 75. Do not apply more than 4 times per season. Do not use in greenhouses for foliar diseases.
Compass 50 WG	140–175 g/1,000 L	Scab	*Crataegus*, *Malus*	See remarks under scab on pg. 75.
Compass 50 WG	3.8 g/100 L	*Rhizoctonia* root rot	*Ligustrum*, *Syringa*, (also *Delphinium*, *Hemerocallis*, *Hosta*, *Iris*, *Phlox*)	Apply as a drench at the time of seeding. Does not control *Pythium* or *Phytophthora*.
Heritage EC	282 g/ha (0.3 g/L)	Daylily rust	Daylilies in Outdoor Nurseries and Landscapes	For use on daylilies to prevent the infection of daylily rust (*Puccinia hemerocallidis*) whenever spores may be present (usually starting in September in Ontario). Apply every 14-28 days. Do not apply more than 2 applications per season.
MilStop	0.28–0.56 kg/ 1,000 m^2	Powdery mildew	Ornamental crops in Greenhouses (African daisy, poinsettia, hydrangea, phlox, bee balm and flowering dogwood)	For the control/suppression of powdery mildew. Start application of MilStop at first sign of disease. For best protection, apply at one to two week intervals until conditions are no longer favourable for disease development.
Rootshield	Drench and granule formulation. See product label.	*Trichoderma harzianum*	Greenhouse ornamentals	Apply as drench or pre-mix granules with media. Disease suppressant.
Subdue MAXX	1.2 L/ha (drench) See product label.	Damping off, root and stem rot caused by *Phytophthora* and *Pythium*	Conifer seedlings	For conifer seedbeds, plugs and 2-0 transplants only.

CHAPTER 5. MANAGING WEEDS

Page 108.

Add

To Table 5–1, *Herbicides Registered For Nursery Crops in Ontario* and Table 5–2, *Herbicides Registered in Ontario* and to *A Compendium of Herbicides*

Trade Name	Common Name
Dacthal W-75	chlorthal dimethyl
Gallery	isoxaben

Delete

From Table 5–1, *Herbicides Registered For Nursery Crops in Ontario* and Table 5–2, *Herbicides Registered in Ontario* and to *A Compendium of Herbicides*

Trade Name	Common Name
Touchdown	glyphosate

Page 111.

Add

Common Name: **chlorthal dimethyl**
Trade Name: Dacthal W-75

Chemical Family: Phthalate

Rates of Application: 6.75–22.5 kg/ha

Remarks:
Use on established nursery stock: abelia, barberry, deutzia, euonymus, forsythia, holly, juniper, locust, maple, oak, spiraea, sycamore, tulip tree, walnut, weigela, willow, yew, English ivy, alyssum, baby's breath, candytuft, feverfew, gladiolus, marigold, peony, petunia and salvia. Can also be used on established ornamental plantings (e.g. flower gardens).

Do not use on: germander, telanthera, bugleweed, mesembryanthemum, button pink, pansy, carnation, phlox, geum, sweet William, celosia, snapdragon and vinca minor.

Sensitive Weeds:
Common lamb's quarters, smooth crabgrass, large crabgrass, lovegrass, carpetweed, witchgrass, purslane, yellow foxtail, green foxtail, common chickweed, redroot pigweed, groundcherry.

Uptake and Translocation:
Absorbed by roots, not foliage. Not translocated through plant.

Basis of Selectivity:
Inhibits growth of germinating seeds.

Application Methods:
Must be applied prior to weed seed germination. Rain or irrigation needed for activation. Remove all existing weeds prior to application, as only germinating weeds will be controlled.

Residual Activity:
Average half life is 100 days in most soil types. Effective weed control can be maintained for as long as two months.

Manufacturer:
AMVAC Chemical Corporation

Common Name: **isoxaben**
Trade Name: Gallery

Chemical Family: Benzamide

Rates of Application: 1.0 kg/ha

Remarks:
To be used on bareroot and container grown nursery stock grown for silvicultural purposes. Use on the following nursery stock 4 weeks after germination or crop emergence: *Picea abies, Picea glauca, Picea mariana, Pinus banksiana, Pinus contorta, Pinus resinosa, Pinus strobus.*

Do not use on: Germination of some sensitive crop species may be reduced in the year following treatment.

Sensitive Weeds:
St. John's-wort, pineappleweed, common lamb's-quarters, common purslane, shepherd's-purse, low cudweed, purslane speedwell.

Uptake and Translocation:
Absorbed by roots and translocated to the shoots of germinating weeds.

Basis of Selectivity:
Root selectivity.

Application Methods:
Do not use more than once per season. Apply in late summer to early fall, early spring or any time prior to germination of target weeds or immediately after cultivation. A single rainfall or sprinkler irrigation of 1 cm after application is necessary to activate Gallery 75 DF within 21 days after application. Apply Gallery 75 DF in 100 to 400 L of water carrier per hectare.

Residual Activity:
Provides season long control.

Manufacturer:
Dow AgroSciences

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